

The purpose of this work is to state the Donsker's invariance principle which is about the relation of a random walk and the Wiener process and to make its detailed proof. Then we will deal with the usage of the Donsker's invariance principle when simulating the trajectory of the Wiener process and we will simulate it with a few of distributions of steps of a random walk. In the next part we will focus on the first passage time of the random walk for which we will derive the distribution and compare to the first passage time of the Wiener process.